

Applic. No. 09/936,069
Art Unit: 1771

REMARKS

Disposition of Claims

Upon entry of the amendments herein, claims 32, 33 and 35-62 will remain pending in the application. Claims 32 and 45-62 have been withdrawn from consideration in response to a restriction requirement made earlier by the Examiner. Claims 1-31 and 34 were previously canceled. Now, independent claim 43 has been amended herein to recite that the auxetic polymeric material is in a continuous filamentary or fibrous form. This amendment is fully supported by the specification particularly at page 6, lines 12-14 (published PCT application). Claim 44 is dependent upon amended claim 43. It is believed that this amendment should be entered, because it does not raise issues that would require further consideration and/or search.

Rejection of Claims 43-44 Under 35 U.S.C. §103(a)

The Office Action states that claims 43-44 are rejected under 35 U.S.C. §103(a) as being unpatentable over "Complete Textile Glossary," Celanese Acetate, LLC, 2001 (hereinafter referred to as "Complete Textile Glossary") in view of Pickles, A.P. et al., "The Effects Of Powder Morphology On The Processing Of Auxetic Polypropylene," Polymer Engineering and Science, Vol. 36, No. 5 (March, 1996) (hereinafter referred to as "Powder Morphology") and "A Stretch Of The Imagination," New Scientist, Vol. 154, No. 2085 (June, 1997) (hereinafter referred to as "A Stretch Of The Imagination"). In reply, it is submitted that the present invention, as recited in amended claims 43-44, is not prima facie obvious over "Complete Textile Glossary" in view of "Powder Morphology" and "A Stretch Of The Imagination" references for the reasons discussed below.

The "Complete Textile Glossary" reference defines a conventional method for manufacturing polypropylene fiber. As the Examiner recognizes, the "Complete Textile Glossary" does not disclose making polypropylene fiber from a heated thermoformable particulate polymer material, wherein cohesion and extrusion are effected during spinning to produce filamentary material having auxetic properties.

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Turning to the "Powder Morphology" reference, Applicants agree with the Examiner that this reference generally discloses that certain grades of polypropylene powder can be processed into polypropylene extrudates having auxetic properties.

But, the "Powder Morphology" reference teaches a batch process for making the polypropylene extrudates. These extrudates have a short, finite length based on the relatively small size of the barrel (processing rig) used to make them. More particularly, as the Examiner recognizes, this reference teaches pouring polypropylene powder into a barrel having a bore diameter of either 10 mm or 15 mm. A ram is then lowered into the bore of the barrel at a rate of 20 mm/min until a pressure of 40 Mpa is reached. This pressure is maintained for twenty minutes to produce a contiguous rod of material. The rod is allowed to cool, and then the rod is removed from the barrel. This cooling step is required to impart structural integrity to the rod. Subsequently, the rod is described as being re-inserted into the barrel and sintered at 160°C for 20 minutes and extruded at 500 mm/min. through a conical die. (page 637, paragraphs 5-6).

Thus, the final polypropylene extrudate described by this reference is a batch-produced rod having a finite length based on the finite size of the barrel used to extrude the rod. The extrudates were produced as "cylinders of up to 11.5 mm in diameter and 90 mm in length. From these, short cylinders 4 mm thick were cut." (page 637, paragraph 7).

In contrast, the presently claimed auxetic polymeric material is in a continuous filamentary form. The filaments extend continuously. There is no restriction as to the length of the continuous filaments. The Examiner takes the position that it would have been obvious to modify the fiber-spinning process described in the "Complete Textile Glossary" reference so that it includes the steps in the "Powder Morphology" reference. But, even if the teachings in the "Complete Textile Glossary" and "Powder Morphology" references were combined, the presently claimed invention would not be obvious to a person of ordinary skill in the art.

The "Powder Morphology" reference describes a barrel (processing rig) designed for producing batch polypropylene extrudates. Applicants submit that this extrusion barrel cannot be simply altered so that it produces a continuous filament. Even if the barrel was modified by forming multiple holes in the conical die, there would be

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problems with the pressure required to extrude the polypropylene material as well as the position of the material in the barrel.

As far as the "A Stretch Of The Imagination" reference is concerned, Applicants recognize that this reference discloses that certain auxetic materials are known and that auxetic fibres would be desirable because of their elongation properties, but there is clearly no disclosure or suggestion in this reference for making continuous auxetic filamentary material as presently claimed.

In summary, claims 43-44 have been amended to recite that the auxetic polymeric material is in a continuous filamentary form. There is no disclosure or suggestion for such continuous filaments in the cited references taken alone or in combination. These cited references only teach a batch process for making polypropylene extrudates having a finite length. Accordingly, it respectfully is requested that the rejection of claims 43-44 (as amended) under 35 U.S.C. § 103(a) be withdrawn.

Allowed Claims

Applicants acknowledge that claims 33 and 35-42 have been allowed. (On page 3 of the Office Action, it reads that claims 32 and 34-42 have been allowed, but this is believed to be a typographical error in view of the Office Action Summary sheet which states that claims 33 and 35-42 have been allowed. Claim 32 was withdrawn from consideration and claim 34 was canceled previously.)

Conclusion

In summary, Applicants submit that all of the claims presented for consideration herein are patentable and each of the Examiner's rejections and objections has been overcome. Accordingly, Applicants respectfully request favorable consideration and allowance of claims 33 and 35-42 (as amended).

The Commissioner is hereby authorized to charge any additional fee required in connection with the filing of this paper or credit any overpayment to Deposit Account 02-0900.

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Should there be any outstanding matter that needs to be resolved in the present application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Respectfully submitted,
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